

Acid Rain

2. Label each seedling with a piece of masking tape that has the group name and relevant water information. Test the pH of your additional water sample and record it.
3. Create a data table.
4. Fill out the data table on Day 0 (setup). Your description of the plants should include qualitative (appearance, color, texture, etc.) and quantitative data (height in cm).
5. With the scissors, cut apart the plastic tray to separate your plants. Make sure each plant has a wick sticking out of the bottom. **DO NOT REMOVE THIS WICK!**
6. Using a spray bottle or graduated cylinder, water your plants with the experimental solutions. Be sure you determine how much water each receives (why is this important? Should the amounts be equal for all of your seedlings? Why?)
7. Take your plants to the watering trays near the window and place them inside. The wick will water your plants from below.
8. Repeat steps 6 and 7 each day for several days. Be sure to fill in your data table with descriptions and height each day.

Last day:

1. Do not spray your plants today. Fill out your data table (description and height), and then remove them from the soil, keeping track of which is which.
2. Choose the largest leaf from each plant and remove it entirely from the stem.
3. Calculate the Leaf Surface Area using the method described below.

Calculation of Leaf Surface Area:

Place a leaf onto the grid below and trace around the edges of the leaf. Count the number of grids that are completely within the leaf. Then estimate the number of partial grids and add the total number of grids for the leaf together. The grid below has been constructed so that each group of 4 grids equals 1cm^2 . The total surface area of a leaf can be calculated by the following formula:

$$\# \text{ of grids in a leaf} \div 4 = \text{Leaf Surface Area}$$

Record this value (in cm^2) in the Leaf Surface Area Data Table. Calculate the surface area for the remaining three leaves. (Your teacher has more grids if you need them.)

Safety:

Wear goggles, gloves, and an apron when working with acids. Listen carefully to safety instructions given to you by your teacher. Wash your hands at the end of lab each day.

Questions to Guide Analysis:

1. After you make your calculations, create a graph of pH vs. leaf surface area.
2. Which type of graph (line or bar) should you create? Why?
3. Plot given pHs as well as leaf surface area of plants sprayed with “real” world samples.